

CLAIMS

1. A titanium dioxide composite having a molecular recognition capacity, comprising titanium dioxide having a surface which is modified with a hydrophilic polymer having carboxyl groups, the carboxyl groups in the hydrophilic polymer being bonded to titanium dioxide through an ester linkage, a molecule having a binding capacity specific for a target molecule being immobilized on the carboxyl groups in the hydrophilic polymer.
2. The titanium dioxide composite having a molecular recognition capacity according to claim 1, wherein said titanium dioxide is an anatase or rutile form of titanium dioxide.
3. The titanium dioxide composite having a molecular recognition capacity according to claim 1 or 2, wherein said titanium dioxide has a particle diameter of 2 to 200 nm.
4. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 3, wherein said titanium dioxide is a composite titanium dioxide comprising titanium dioxide and a magnetic material.
5. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 4, wherein said hydrophilic polymer is a water soluble polymer.
6. The titanium dioxide composite having a molecular recognition capacity according to claim 5, wherein said water soluble polymer contains a polycarboxylic acid.
7. The titanium dioxide composite having a molecular recognition capacity according to claim 5, wherein said water soluble polymer comprises a copolymer having a plurality of carboxyl group units in its molecule.

8. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 7, wherein the molecule having a binding capacity specific for a target molecule is an amino acid, a peptide, a simple protein, a complex protein, or an antibody.

9. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 7, wherein the molecule having a binding capacity specific for a target molecule is a nucleoside, a nucleotide, a nucleic acid, or a peptide nucleic acid.

10. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 7, wherein the molecule having a binding capacity specific for a target molecule is a monosaccharide, a sugar chain, a polysaccharide, and a complex carbohydrate.

11. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 7, wherein the molecule having a binding capacity specific for a target molecule is a fatty acid, a fatty acid derivative, a simple lipid, and a complex lipid.

12. The titanium dioxide composite having a molecular recognition capacity according to any one of claims 1 to 7, wherein the molecule having a binding capacity specific for a target molecule is a physiologically active substance.

13. A dispersion liquid of a titanium dioxide composite having a molecular recognition capacity, wherein comprising the titanium dioxide composite having a molecular recognition capacity according to any one of claims 8 to 12, contained in an aqueous solution of which the introduction into a living body is acceptable.

14. The dispersion liquid of a titanium dioxide composite having a molecular recognition capacity according to claim 13, wherein the aqueous solution is a pH buffer solution.

15. The dispersion liquid of a titanium dioxide composite having a molecular recognition capacity according to claim 13, wherein the aqueous solution is physiological saline.

16. The dispersion liquid of a titanium dioxide composite having a molecular recognition capacity according to any one of claims 13 to 15, wherein the titanium dioxide composite having a molecular recognition capacity is included in an inclusion material of which the introduction into a living body is acceptable.

17. The dispersion liquid of a titanium dioxide composite having a molecular recognition capacity according to claim 16, wherein said inclusion material is any of a liposome, a virus particle, and a hollow nanoparticle.